

Amendments to the Abstract:

Please make the following Amendments to the Abstract:

~~A method for creating a frequency domain semblance for use in conjunction with acoustic logging tools is disclosed. Such a frequency domain semblance may be obtained by transforming an acoustic signal received at multiple depths into the frequency domain, combining the received waveforms corresponding to the different depth, and expressing the result in a graph with slowness and frequency axes. This graph shows the frequency slowness location for the acoustic signal, as well as for other related signals that may inadvertently be generated by the acoustic logging tool. This information may then be used to more clearly measure the slowness of the received acoustic signal. Another aspect of the invention is the treatment of two or more time domain semblances as probability density functions of the slowness for an acoustic signal. This enables the combination of time domain semblances from the same depth in the wellbore. Once combined, the time domain semblances more accurately depict the slowness of an acoustic wave through the formation at the selected depth. In addition, a related self adaptation method to compress the waveform data downhole for storage or transmission is also disclosed.~~ A self-adaptable data compression technique includes compressing the digital data points of a waveform according to at least a first protocol and a second protocol, and various comparing the compressed data under various protocols to determine which would require the least memory for storage.